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Project for a Europe-Africa fixed link through the Strait of Gibraltar

Note by the Secretary-General

The Secretary-General has the honour to transmit to the Economic and Social Council the report prepared in accordance with Council resolution 2009/11 of 28 June 2009 by the Executive Secretaries of the Economic Commission for Europe and the Economic Commission for Africa on the activities carried out within the framework of the project for a Europe-Africa fixed link through the Strait of Gibraltar.

The Council has been interested in this project since 1982, following the decision taken by the Governments of Morocco and Spain within the framework of a bilateral agreement on cooperation adopted on 24 October 1980 for the joint study of the feasibility of the project. Since that time, the Council has regularly requested the two regional commissions to follow the development of the project studies and keep it informed in that regard.

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Report of the Executive Secretaries of the Economic Commission for Europe and the Economic Commission for Africa on activities carried out during the period 2015-2017 and programme proposed for the period 2017-2019 on the project for a Europe-Africa fixed link through the Strait of Gibraltar

Summary

The present report, prepared jointly by the Economic Commission for Europe and the Economic Commission for Africa pursuant to Council resolution 2015/21 of 22 July 2015, summarizes the work done on the fixed-link project by the two engineering firms, Sociedad Española de Estudios para la Comunicación Fija a través del Estrecho de Gibraltar and Société nationale d'études du détroit de Gibraltar.

The period 2015-2017 was devoted to updating the project feasibility studies and preparing a new workplan for the project. This involved:

- Reviewing the studies on technical solutions and site data
- Monitoring and analysing data on passenger and goods traffic between European Union countries and Maghreb countries
- Updating forecasting studies on the demand for and use of the future infrastructure
- Inclusion of the project in the core multimodal transport network of the Western Mediterranean Transport Group (GTMO) at the meeting of the Group's Ministers of Transport, held in Lisbon on 22 October 2014, who instructed the Group of Experts and the technical secretariat of GTMO to follow up on the work carried out by Morocco and Spain on this project.
- The commitment of the Governments of Morocco and Spain to the fixed-link project, demonstrated by their signature of a memorandum of understanding in the area of transport at the eleventh high-level meeting between the two countries, held in Madrid on 5 June 2015.

Studies in 2017-2019 will consist of investigation and technical research aimed at clearly identifying a feasible technical solution that takes account of financing and profitability and respects the time frame set out. Activities to promote and present the project to international and financial institutions are also planned.

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I. Introduction

1. Every two years since 1981, the Economic and Social Council has undertaken an evaluation of the surveys and studies on the project for a Europe-Africa fixed link through the Strait of Gibraltar, which has been made possible by the collaborative relationship that has developed between the two engineering firms and the Executive Secretaries of the Economic Commission for Africa and the Economic Commission for Europe. At its session in July 2015, the Council considered the report on those studies presented by the two Commissions.

2. The purpose of the present report, which was prepared jointly with the two firms responsible for carrying out the project studies, is to ensure that the Commissions continue to take an active part in the follow-up to the studies and to report to the Council at its 2017 meeting. The report includes, first, a summary of activities undertaken from 2015 to 2017 and, second, a summary description of the principal activities to be undertaken between 2017 and 2019 to advance the project.

3. It will be recalled that the goal of the project is the joint study by Morocco and Spain of a cross-Strait transport construction project, in order to strengthen Moroccan-Spanish cooperation, promote the establishment of an integrated Euro-Mediterranean economic area and develop a key transportation hub for an integrated Euro-African land network. The aim is to enhance the role of the Strait of Gibraltar as a vital trade corridor between Europe and Africa and meet potential traffic demand under satisfactory conditions of security, speed and respect for the environment. The studies for the project are taking place within the framework of the bilateral agreements signed by the Governments of Morocco and Spain on 24 October 1980 and 27 September 1989, whereby the two parties agreed to study jointly the feasibility of the project for a fixed link through the Strait of Gibraltar on the basis of an equal sharing of costs, and under the authority of an intergovernmental joint committee, with the help of two State engineering firms, namely Sociedad Española de Estudios para la Comunicación Fija a través del Estrecho de Gibraltar (SECEGSA), the head office of which is in Madrid, and Société nationale d'études du détroit de Gibraltar (SNED), which has its head office in Rabat.

4. Advancing the project has required many years of research and studies, as well as close collaboration between Morocco and Spain through the two engineering firms, collaboration with scientific and technical research institutes, and the expertise of internationally renowned consultancy offices. Different fields of research and a variety of approaches (geological, oceanographic and seismic surveys; engineering studies; and socioeconomic data) have been called upon in an effort to study and make decisions regarding the establishment of the future link through the Strait of Gibraltar. Following preliminary studies, which analysed numerous criteria relating to the options under consideration (a bridge constructed on fixed supports, a bridge constructed on floating supports, a tunnel resting on the seabed, a floating tunnel and a bored tunnel), the basic option of boring a rail tunnel under the seabed was selected in 1995. The functional design, which is similar to that of the Channel Tunnel, allows for the interconnection of the two countries' railway networks and the transfer of road vehicles on shuttle trains running between two terminal stations, one in Spain and the other in Morocco.

II. General geostrategic context

5. The creation of a fixed link through the Strait of Gibraltar could significantly boost regional stability and economic growth. Its unparalleled location would make it a hub for the European and African transport networks, which would facilitate the

movement of people and goods between Europe and Africa. The transport development strategy of the western Mediterranean region would change substantially as a result.

6. Given its strategic geographical position, it is clear that much more is at stake than merely a cross-border transport construction project and that the full implications of the project will play out across several different levels.

7. In terms of its impact on Morocco and Spain, the fixed link will benefit plans for the development of their rail and highway transport networks. The journey between the two terminals would take no longer than 30 minutes, similar to the duration of urban or peri-urban trips. Moreover, high-speed rail networks, which are expanding rapidly in both Spain and Morocco, have the potential to vastly increase the speed of trade between the two countries. Linking these networks together would enable them to expand and diversify the services offered, ensure continuity of service and shorten the crossing time. The potential increase in transport demand could benefit the two instigating countries equally.

8. In terms of local impact, the project is part of a much broader regional development framework, involving the ports in particular. The ports of Tanger-Med and Algeciras are currently undergoing expansion and adding capacity, seeking a strategic position in the international transport network. The project will add value to and complement these port facilities and could provide a real boost to local development.

9. In terms of its impact at the transcontinental level and for the Mediterranean region, the project will provide a strong and continuous link between European transport networks and those of Mediterranean countries and could serve as a catalyst for infrastructure planning, given its potential impact on development in the Mediterranean region. It will provide the crucial missing link in the Euro-Mediterranean transport system. In this transcontinental context, the project is part of the overall strategy for transport development in the western Mediterranean adopted in the context of numerous projects carried out by Euro-Mediterranean bodies in the region.

10. This outlook is in line with the overall Euro-Mediterranean transport development strategy under various cooperation programmes, in particular the Regional Transport Action Plan for the Mediterranean Region 2014-2020, adopted in Brussels in March 2015 by the Euro-Mediterranean Transport Forum; the Union for the Mediterranean programme; and the cooperation framework led by GTMO, which have emphasized the importance of establishing a Euro-Mediterranean integrated multimodal transport network in order to strengthen trade between the European Union and its Mediterranean partners.

11. In conclusion, the project's geostrategic component and the potential of long-distance rail systems for the development of mass transport networks weigh heavily in favour of its implementation and the involvement of the international community. The project's area of influence has considerable development potential, and it is therefore likely to attract international financial and technological investment.

III. Activities carried out during the period 2015-2017

12. Since the Council's previous meeting on the project, held in 2015, project activities have focused primarily on an in-depth review of the studies and the continuation of activities initiated during earlier stages, the main findings of which have informed the current report, as well as on active collaboration between the two firms to prepare the workplan for the next phase of the project studies.

13. In terms of the project's organization and management, the Governments of Spain and Morocco have appointed the members and the co-chairs of the intergovernmental Joint Committee, which oversees the project in conjunction with the chief executives of the two engineering firms. This has enabled enhanced cooperation between the two firms in assessing the status of the project and preparing a new workplan.

14. It is worth recalling that the project, at its current stage, consists of the basic option of boring a rail tunnel under the seabed. The choice of route depends on the topography of the terrain, which is one of the distinctive features of the physical geography of the Strait. The point at which the two continents are the closest is approximately 14 kilometres wide, but that route has been found to be the deepest in the Strait, reaching 900 metres at some places. The best route in terms of distance and depth stretches between Punta Paloma on the Spanish coast and Ras Malabata on the Moroccan coast. It covers a distance of 28 kilometres and reaches a maximum depth of 300 metres. The construction process envisages the prior excavation of a 17-kilometre exploratory gallery, which will be essential in order to accurately identify the geological characteristics of the area, optimize construction methods and refine the cost and timeline forecasts for tunnel construction.

15. The length of the structure as currently proposed would be 42 kilometres between terminals, 37.7 kilometres of which would be tunnel, including 27.7 kilometres of undersea tunnel. This basic option, identified in 1996, was subject to a preliminary pilot project, which was updated in 2007 in the light of new geological and geotechnical data, and was then evaluated within the framework of an overall evaluation of the project.

16. However, the geological complexity of the site and the geotechnical characteristics of the materials identified along the only viable route through the Strait mean that the chosen solution requires additional geotechnical investigation to establish the geometry of the palaeochannels and the geomechanical properties of their formation. Considering the size and exceptional nature of the project, a programme of additional exploration and studies is needed.

17. The main technical activities recently carried out have related to:

(a) The physical environment, through:

- Geodetic measurements on the two shores of the Strait and monitoring of information from the permanent Global Positioning System (GPS) stations in the area
- Updating of geological maps and data for the north and south shores
- Research and maintenance of experimental work at Tarifa
- Analysis and summary of geotechnical information on flysch and breccia
- Follow-up of laboratory tests and comparison with on-site tests
- Abrasiveness tests on rock formations in the Strait of Gibraltar
- Measurement and prediction of sea currents in the Strait
- Seismic research and studies and seismotectonic studies
- Cooperation with scientific institutions working in the area

(b) Engineering, through:

- Assessment of the preliminary pilot project for the basic option and the environmental impact study

- Updating and expanding the operation and capacity study
- Further analysis of the geomechanical properties of the breccia
- Follow-up regarding the development of tunnel boring machines and the construction of large tunnels

(c) The socioeconomic environment, through:

- Evaluation and review of aspects of demand that are part of the traffic forecasting model
- Monitoring of specific legal issues
- Analysis of the socioeconomic impact of the project on the regions concerned
- Monitoring socioeconomic data and collecting and analysing data on passenger and goods traffic between Europe and Africa. The annual statistical reports produced on such data have made it possible to establish time series spanning more than 20 years
- Studying the potential for the fixed link to transport goods and services other than passengers and merchandise, such as energy and communications

18. However, the project is more than just a technical challenge or a piece of infrastructure linking two continents. It also entails the provision of an intercontinental transportation service to a very large, transnational body of users. Determining the exact benefits and impacts of the project is therefore essential. The analysis of mega-projects or cross-border structures provides illuminating examples of the benefits of projects of similar proportions.

IV. Involvement of institutional actors

19. Against a backdrop of growth in trade in goods and services and increased international mobility, the project will affect a huge intercontinental area of Europe and Africa beyond the immediate vicinity of the facilities. It will serve as a strategic hub in a process of regional economic integration that will contribute to sustainable development and stability in the region.

20. The complexity of the project and its economic and financial impact transcend the bilateral framework of the two instigating countries. Various institutional actors have already become involved in promoting the project, pursuant to the provisions of relevant Council resolutions. This initiative should be pursued and extended to all potential partners who could become involved in, or alongside, the various phases of the project.

21. The process of consulting with and involving international actors should also include efforts to involve those actors in providing support, especially financial support, for the project. The geostrategic importance of the project, its economic repercussions for the region and its impact at the international level fully justify such involvement, but the natural corollary to an oversight role for partners in decision-making is the duty to provide support.

22. This broad international backdrop underscores the Euro-Mediterranean nature of the project and the geographical extent of its potential socioeconomic impact. It therefore justifies the participation of the European Commission and other regional institutions in the project's development.

23. The European Union, to which the project has been referred, will be one of the leading partners. That makes the Euro-Mediterranean Transport Forum, as an institutional framework for regional collaboration,[1] a particularly interesting entity for promoting the fixed-link project, because it is there that the trans-Mediterranean transport network will be defined. The Regional Transport Action Plan for the Mediterranean Region 2014-2020 was adopted at the meeting of the Forum held in Brussels on 25 March 2015. The Forum will also propose the indicative map of the trans-Mediterranean transport network to be adopted at the Conference of Ministers of Transport of the Union for the Mediterranean. That map will be proposed for inclusion in regulation (EU) No. 1315/2013 on European Union guidelines for the development of the trans-European transport network as an indicative extension of that network to the European Union's Mediterranean partners. Inclusion of the map of the trans-Mediterranean transport network will formalize, for the European Union, the vision of a connection between the two networks and will also confirm the consistency of the approach to developing transport connections not only within the European Union but also jointly with its neighbours. This explains the interest in considering the Europe-Africa fixed link project as an integral part of the indicative trans-Mediterranean transport network.

24. In the framework of Euro-Mediterranean transport cooperation, the Conference of Ministers of Transport of the Mediterranean, held in Brussels on 14 November 2014, and the Conference of Ministers held in Rotterdam, Netherlands, on 21 June 2016 on the occasion of the Trans-European Transport Network Days, emphasized the need for a Euro-Mediterranean integrated multimodal transport network, which would have a key role to play in enhancing trade between the European Union and its Mediterranean partners. The fixed-link project is entirely consistent with the goals adopted by the Conference of Ministers to link the Mediterranean and trans-European transport networks in order to ensure their interoperability and thus foster regional cooperation in the transport sector throughout the Mediterranean region.

25. The Western Mediterranean Transport Group (GTMO),[2] which is mandated to advance regional transport cooperation in the Western Mediterranean region, is an appropriate framework for assessing and fostering the interest of the countries closest to the project. Its Group of Experts, coordinated by the GTMO technical secretariat at the Centre for Transportation Studies for the Western Mediterranean, follows up initiatives adopted by the Ministers of Transport and also proposes cooperation priorities. Representatives of the two engineering firms joined the Group at its eighteenth meeting, held in Barcelona, Spain, on 4 July 2013. Together with representatives of both the Moroccan and Spanish Ministries of Transport, the two firms participated in the meetings held in 2014 and 2015, allowing for the inclusion of the project in the core multimodal network adopted at the eighth Conference of the Western Mediterranean Transport Group, held in Lisbon on 22 October 2014. Furthermore, the outcome declaration from that Conference mandated the Group of Experts and the GTMO technical secretariat to conduct semi-annual follow-up of the work done by Morocco and Spain in relation to the project.

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[1] The Euro-Mediterranean Transport Forum brings together the European Commission Directorates General for Mobility and Transport (DG MOVE) and for Neighbourhood and Enlargement Negotiations (DG NEAR); the Union for the Mediterranean; representatives of the Ministries of Transport of the Mediterranean partners and the States members of the European Union; and associated institutions, such as the Western Mediterranean Transport Group (GTMO)/Centre for Transportation Studies for the Western Mediterranean, the Arab Maghreb Union, the Economic and Social Commission for Western Asia and international financial institutions (European Investment Bank, World Bank, European Bank for Reconstruction and Development, etc.).

[2] The Western Mediterranean Transport Group comprises the Ministers of Transport of Algeria, France, Italy, Libya, Malta, Mauritania, Morocco, Portugal, Spain and Tunisia.

26. In conclusion, the project is contributing to the development of a Euro-Mediterranean integrated multimodal transport network and will stimulate movement of people and goods, trade relations and business cooperation among all Mediterranean partners and with the European Union, by enabling a strategic land-based connection between the future trans-Mediterranean transport network and the trans-European transport network. Despite the long-term nature of the project, its existence could serve as a catalyst and promote development throughout the Mediterranean region.

V. Future work

27. SNED and SECEGSA, drawing on the results of earlier or existing studies, data and analyses and those that are under way, are preparing a joint workplan covering a period of three years, in principle. Once it has been adopted by the Joint Committee, it will determine the activities to be carried out by the two engineering firms in order to further the project. The study process is intended as, and indeed must be, a process for reviewing and updating the results obtained.

28. The aim of the study process is to find a feasible solution for crossing the Strait of Gibraltar. Following several coordination meetings and the organization of technical assessment meetings in which internationally renowned experts participated, a number of activities were identified that would support decision-making and enable activities to be proposed for the main body of the workplan. The project's development stage must be addressed from two main analytical directions, covering both the technical challenge of a fixed link through the Strait of Gibraltar and the challenges of ensuring optimal interoperability of the transport networks on either side of the Strait. The workplan proposes to separate these two aspects, though obviously with the long-term aim of reaching a unified definition of the project in its different dimensions.

29. The aim of the workplan is to draw on the results of earlier study phases and existing data and analyses and initiate a process of reviewing and updating previous conclusions on the basis of the progress made and innovations in the construction industry and in the materials and techniques used to build large structures around the world. This would provide the Moroccan-Spanish Joint Committee with an update on earlier studies and results and a series of proposals for advancing towards a technically and economically feasible solution.

30. The workplan has five headings:

(a) Site data

(b) Engineering and environment

(c) Socioeconomics and financing

(d) External relations

(e) Communication

31. The following appears under the heading "Site data":

- Explore the fill material of the palaeochannels (breccia) by following up on the development of geotechnical research techniques by undersea drilling. Contact experts and drilling companies to determine the most suitable project approaches based on the current technology
- Maintain active cooperation among the relevant scientific institutions and universities in the two countries, especially in the collection of all types of

data in the Strait (including seismic, geodesic and altimetric data, and prediction of sea currents)

- Maintain, improve and carry out scientific research in the exploratory gallery of Tarifa, and possibly overhaul that of Malabata
- Study the development of geotechnical research techniques by undersea drilling through the breccia and exploration of the previously excavated undersea gallery
- Study directional drilling techniques and the possibility of carrying out an undersea long horizontal drilling operation at the end of the workplan

32. With regard to the heading "Engineering and environment", the 2007 update of the preliminary pilot project (PPP-07) concluded that, in order to test excavation conditions in the flysch and brecchia, an exploratory gallery must be dug through the two palaeochannels in the Strait. It would therefore be useful to update and further define the characteristics of the gallery, and to identify the goals and means of its construction, including financial aspects.

33. Moreover, recent studies have emphasized that the tunnel must be used in dual-tube mode from the beginning. Updating the tunnel's mode of use must therefore be included on the programme of activities.

34. As a result, the main goal of the workplan activities related to engineering and the environment is to make progress in the studies examining the feasibility of the fixed link through the Strait of Gibraltar and to update the technical definition of the project in the light of available data and expert assessments previously conducted or to be carried out through:

- Contact with the designers and contracting authorities of similar exceptional projects
- Support from well-regarded engineering experts who have worked on similar exceptional projects in order to consider and update the results of earlier studies
- Resumption of modelling the geomechanical behaviour of the materials
- Additional tests on the samples obtained during earlier surveys
- Updating the costs and time frames for tunnel construction
- Determining how easily a tunnel may be bored through the material, in particular the breccia
- Follow-up regarding the development of tunnel boring machines and contact with construction firms to arrive at a first approximation of the type of tunnel boring machine the project would require
- A comparative evaluation of methods for digging an exploratory gallery
- An analysis of the risks and how such risks may be offset
- Updating the study of operation, capacity and services to be offered
- Defining more precisely the characteristics of the exploratory gallery

35. Thus, the aim is to achieve a preliminary pilot project (with an operating system) that is technically feasible and presents the most favourable estimated costs and time frames.

36. Under the "Socioeconomics and financing" heading, the following activities are proposed:

- Boosting socioeconomic monitoring of the Strait and demand analysis
- Updating and exploiting the traffic forecasting study
- Developing a study to examine dynamic aspects and establish potential scenarios
- Identifying all actions likely to enhance the attractiveness of the two regions bordering the Strait of Gibraltar, and improve connectivity and transport efficiency
- Defining support measures for the project and measures for improving and developing its area of influence
- Studying the potential for the fixed link to transport goods other than passengers and merchandise, such as energy and communications; viability studies on the different technical options
- Identifying sources of financing for studies and research on the fixed-link project
- Conducting studies on legal, socioeconomic and transport-related issues

37. With regard to the "External relations" heading, the goal is to show the regional and intercontinental benefits of constructing a fixed link through the Strait of Gibraltar by promoting the project among international bodies, in particular the Economic and Social Council, the European Commission, the Union for the Mediterranean, the Western Mediterranean Transport Group (GTMO) and the African organizations and securing their support and commitment.

38. Under the "Communication" heading, the aim is to revise the material promoting the project in several languages once the technical details have been updated.

VI. Conclusions

39. Analysis of the current stage must be addressed from two main directions:

- The technical challenge of a fixed link through the Strait of Gibraltar, and finding an option that is technically feasible and offers optimal costs and time frames
- The challenges of ensuring optimal interoperability of the transport networks on each side of the Strait, so as to contribute to the development and integration of the region's transport systems with the aim of converging towards a unified definition of the project in its different dimensions

40. The elements mentioned above should yield specific results that will make it easier to establish a firm foundation regarding the prospects for developing a project of this magnitude and to secure the support of as many partners as possible.